Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A lithographic printing plate precursor comprising
    a) an untreated or pretreated substrate and
    b) a radiation-sensitive coating comprising
        (i)at least one polymeric binder soluble or swellable in aqueous alkaline developers;
        (ii) at least one free-radical polymerizable monomer and/or oligomer comprising at least one non-aromatic C–C double bond and at least one SH group in the molecule; and
        (iii) a radiation-sensitive initiator or initiator system for free-radical polymerization comprising as least one IR absorber capable of absorbing radiation in the wavelength of more than 750 to 1,200 nm and at least one coinitiator selected from polyhalogenalkyl-substituted compounds, onium compounds and mixtures of a polyhalogenalkyl-substituted compound and an onium compound,

wherein component (ii) has the following formula (I):

$$HS - Z - (Z^1 - CR^{1a} = CR^{1b}R^{1c})_c \qquad (I)$$

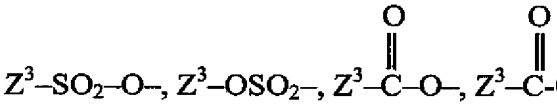
wherein each R^{1a}, R^{1b} and R^{1c} is independently selected from H, C_1-C_6 alkyl, C_2-C_8 alkenyl, aryl, halogen, CN and $COOR^{1d}$, wherein R^{1d} is H, C_1-C_{18} alkyl, C_2-C_8 alkenyl, C_2-C_8 alkynyl or aryl; and

Z is an aliphatic, heterocyclic or heteroaromatic spacer or a combination of two or more thereof, wherein Z can optionally comprise one or more

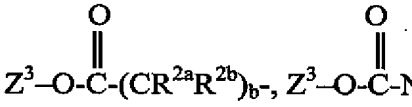
additional SH groups and/or one or more additional non-aromatic C–C double bonds; and

each Z^1 is independently selected from a single bond,

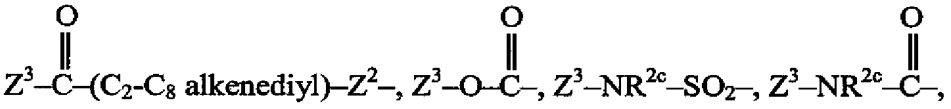
Z^3–C–, Z^3–$(CR^{2a}R^{2b})_b$–, Z^3–O–$(CR^{2a}R^{2b})_b$–, Z^3–NR^{2c}–$(CR^{2a}R^{2b})_b$–, Z^3–S–$(CR^{2a}R^{2b})_b$– ,



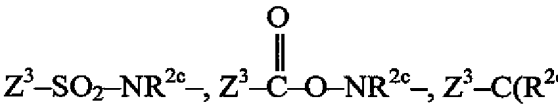
Z^3–SO_2–O–, Z^3–OSO_2–, Z^3–C–O–, Z^3–C-O-$(CR^{2a}R^{2b})_b$-Z^2-,



Z^3–O-C-$(CR^{2a}R^{2b})_b$-, Z^3–O-C-NH-,



Z^3–C–(C_2-C_8 alkenediyl)–Z^2–, Z^3–O–C–, Z^3–NR^{2c}–SO_2–, Z^3–NR^{2c}–C–,



Z^3–SO_2–NR^{2c}–, Z^3–C–O–NR^{2c}–, Z^3–$C(R^{2c})$=N–, Z^3–N=$C(R^{2c})$–,

Z^3–S–$(CR^{2a}R^{2b})_c$-arylene-, Z^3–O– $(CR^{2a}R^{2b})_c$-arylene- and Z^3–NR^{2c}-$(CR^{2a}R^{2b})_c$-arylene-,

wherein R^{2a}, R^{2b} and R^{2c} are independently selected from H, C_1-C_6 alkyl and aryl,

Z^2 is selected from a single bond, O, S and NR^{2c},

Z^3 is a single bond which is connected to Z,

b is an integer from 1 to 10 and

c is an integer from 1 to 3.

wherein either: the component (ii) comprises two SH groups and one non-aromatic C–C double bond per molecule; or the component (ii) comprises one SH group and two or more non-aromatic C–C double bonds per molecule.

2. (original) Lithographic printing plate precursor according to claim 1, wherein R^{1a} is selected from H, CH_3 and COOH,

R^{1b} and R^{1c} are independently H, CH_3 or $-COOCH_3$,

R^{1d} represents H, CH_3 or $-CH_2-CH=CH_2$,

Z^1 is a single bond, $-CH_2-$, $-O-$ or $-C(=O)-OCH_2CH_2-$,

c is 1,

Z is 1,3,5-triazine-2,4-diyl or 1,3,4-thiadiazole-2,5-diyl,

R^{2a}, R^{2b} and R^{2c} are independently H or CH_3, and

b represents 1 or 2.

3. (cancelled)

4. (cancelled)

5. (previously presented) Lithographic printing plate precursor according to claim 1 wherein the component (ii) is at least one compound selected from

2-thio(4-ethenyl)benzyl-5-mercapto-1,3,4-thiadiazole

2-thio(4-methylcrotonato)- 5-mercapto-1,3,4-thiadiazole

2-thio(4-ethenyl)benzyl-4,6-dimercapto-1,3,5-triazine

2,4-di-thio(4-ethenyl)benzyl-6-mercapto-1,3,5-triazine

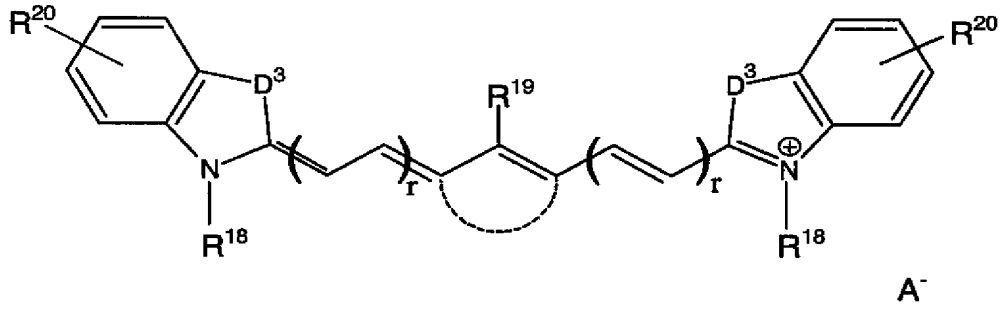
2-thio(4-methacroylmethylene)benzyl-5-mercapto-1,3,4-thiadiazole and

3-thio(4-ethenyl)benzyl-5-mercapto-1,2,4-triazole.

6. (previously presented) Lithographic printing plate precursor according to claim 1, wherein the radiation-sensitive coating furthermore comprises at least one free-radical polymerizable monomer and/or oligomer without SH groups.

7. – 9. (cancelled)

10. (previously presented) Lithographic printing plate precursor according to claim 1, wherein the IR absorber is a cyanine dye of formula (V)



(V)

wherein

each D^3 independently represents S, O, NR^{12} or $C(alkyl)_2$;

each R^{18} independently represents an alkyl group;

R^{19} represents a halogen atom, SR^{12}, OR^{12} or NR^{12}_2;

each R^{20} independently represents a hydrogen atom, an alkyl group, OR^{12}, SR^{12} or NR^{12}_2 or a halogen atom; R^{20} can also be a benzofused ring;

A- represents an anion;

--- represents an optionally present carbocyclic five- or six-membered ring;

R^{12} represents an alkyl or aryl group; in the case of NR^{12}_2, one group R^{12} can also represent H;

each r can independently be 0, 1, 2 or 3.

11. (original) Lithographic printing plate precursor according to claim 10, wherein the IR dye is

2-[2-[2-phenylsulfonyl-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indole-2-ylidene)-ethylidene]-1-cyclohexene-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indoliumchloride, 2-[2-[2-thiophenyl-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indole-2-ylidene)-ethylidene]-1-cyclopentene-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indoliumtosylate, 2-[2-[2-thiophenyl-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-indole-2-ylidene)-ethylidene]-1-cyclohexene-1-yl]-ethenyl]-1,3,3-trimethyl-3H-indoliumchloride, 2-[2-[2-chloro-3-[2-(1,3-dihydro-1,3,3-trimethyl-2H-benzo[e]-indole-2-ylidene)-ethylidene]-1-cyclohexene-1-yl]-ethenyl]-1,3,3-trimethyl-1H-benzo[e]-indolium-tosylate or 2-[2-[2-chloro-3-[2-ethyl-3H-benz-thiazole-2-ylidene)-ethylidene]-1-cyclohexene-1-yl]-ethenyl]-3-ethyl-benzthiazolium-tosylate.

12. (previously presented) Lithographic printing plate precursor according to claim 1 wherein the coinitiator is a polyhalogenalkyl-substituted compound selected from 2-phenyl-4,6-bis-(trichloromethyl)-s-triazine, 1,2,3,4-tetrabromo-n-butane, 2-(4-methoxyphenyl)-4,6-bis(trichloromethyl)-s-triazine, 2-(4-chlorophenyl)-4,6-bis(trichloro-methyl)-s-triazine, tribromomethylphenylsulfone, 2,4,6-tri(trichloromethyl)-s-triazine and 2,4,6-tri(tribromomethyl)-s-triazine.

13. (previously presented) A lithographic printing plate precursor comprising

a) an untreated or pretreated substrate and

b) a radiation-sensitive coating comprising

(i) at least one polymeric binder soluble or swellable in aqueous alkaline developers;

(ii) at least one free-radical polymerizable monomer and/or oligomer comprising at least one non-aromatic C–C double bond and at least one SH group in the molecule; and

(iii) a radiation-sensitive initiator or initiator system for free-radical polymerization capable of directly forming free radicals upon absorption of UV radiation,

wherein component (ii) has the following formula (I):

$$HS - Z - (Z^1 - CR^{1a} = CR^{1b}R^{1c})_c \qquad (I)$$

wherein each R^{1a}, is selected from H, CH_3, and COOH,

R^{1b} and R^{1c} is independently selected from H, CH_3 and $-COOCH_3$;

Z^1 is a single bond, $-CH_2-$, $-O-$ or $-C-OCH_2CH_2-$,

c is 1,

Z is 1,3,5-triazine-2,4-diyl or 1,3,4-thiadiazole-2,5-diyl,

R^{2a}, R^{2b} and R^{2c} are independently H or CH_3, and

b represents 1 or 2.

14. (previously presented) The lithographic printing plate precursor according to claim 13, wherein the coating comprises an initiator system comprising at least one sensitizer capable of absorbing radiation in the range of 300 to 750 nm and at least one coinitiator incapable of absorbing radiation in the range of 300 to 750 nm by itself, but capable of forming free radicals together with the sensitizer.

15. (original) Lithographic printing plate precursor according to claim 14, wherein the sensitizer is selected from 1,4-dihydropyridines, oxazoles, bisoxazoles and analogues thereof, coumarins and metallocenes.

16. (previously presented) Lithographic printing plate precursor according to claim 14, wherein the coinitiator is selected from amines, onium salts, N,N-dialkylaminobenzoic acid esters, N-arylglycines and derivatives thereof, diazosulfonates, 9,10-dihydroanthracene derivatives, N-aryl-, S-aryl- or O-

aryl-polycarboxylic acids with at least two carboxyl groups, wherein at least one of which is bonded to the nitrogen, oxygen or sulfur atom of the aryl unit, a hexaarylbiimidazole and polyhalogenalkyl-substituted compounds.

17. (previously presented) Lithographic printing plate precursor according to claim 1, wherein the radiation-sensitive coating furthermore comprises at least one polycarboxylic acid.

18. (original) Lithographic printing plate precursor according to claim 17, wherein the polycarboxylic acid has the formula (VI):

$$R^{21} - (CR^{22}R^{23})_a - A - CH_2COOH \qquad (VI)$$

wherein

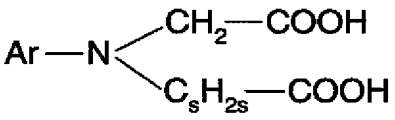
A is selected from O, S or NR^{24}, wherein R^{24} represents a hydrogen atom, a C_1-C_6 alkyl group, a group CH_2CH_2COOH or a C_1-C_5 alkyl group substituted with –COOH;

R^{21}, R^{22} and R^{23} are independently selected from a hydrogen atom, C_1-C_6 alkyl group, substituted or unsubstituted aryl group, -COOH or $NR^{25}CH_2COOH$, wherein R^{25} is selected from $–CH_2COOH$, $-CH_2OH$ and $–(CH_2)N(CH_2)COOH$; and

a is 0, 1, 2 or 3,

with the proviso that A, R^{21}, R^{22} and R^{23} are selected such that the acid of Formula (VI) comprises at least one further COOH group in addition to that shown in Formula (VI).

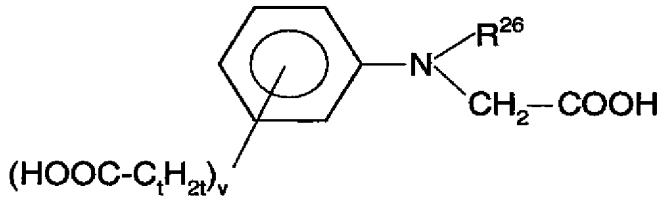
19. (original) Lithographic printing plate precursor according to claim 18, wherein the polycarboxylic acid is a compound of formula (VIa)



(VIa)

wherein Ar represents a mono- or polysubstituted or unsubstituted aryl group and s is an integer of 1 to 5,

or a compound of formula (VIb),



(VIb)

wherein R^{26} represents a hydrogen atom or a C_1-C_6 alkyl group and t and v are each an integer from 1 to 5.

20.- 21. (cancelled)

22. (previously presented) Lithographic printing plate precursor according to claim 1 wherein an oxygen-impermeable overcoat is provided on the radiation-sensitive layer.

23. (previously presented) Lithographic printing plate precursor according to claim 1 wherein the polymeric binder has an acid number of >70 mg KOH/g polymer.

24. (previously presented) Process for producing a lithographic printing plate precursor as defined in claim 1 comprising:

(a) providing an untreated or pretreated substrate,
(b) applying a radiation-sensitive composition comprising

(i) at least one polymeric binder soluble or swellable in aqueous alkaline developers;

(ii) at least one free-radical polymerizable monomer and/or oligomer comprising at least one non-aromatic C–C double bond and at least one SH group in the molecule; and

(iii) a radiation-sensitive initiator or initiator system for free-radical polymerization comprising as least one IR absorber capable of absorbing radiation in the wavelength of more than 750 to 1,200 nm and at least one coinitiator selected from polyhalogenalkyl-substituted compounds, onium compounds and mixtures of a polyhalogenalkyl-substituted compound and an onium compound,

wherein component (ii) has the following formula (I):

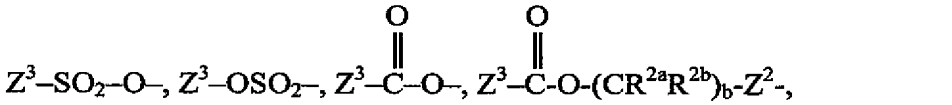
$$HS - Z - (Z^1 - CR^{1a} = CR^{1b}R^{1c})_c \qquad (I)$$

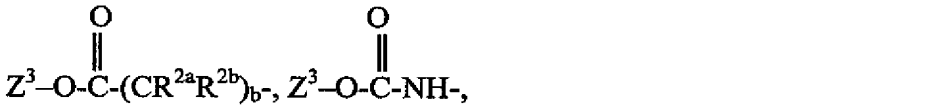
wherein each R^{1a}, R^{1b} and R^{1c} is independently selected from H, C_1-C_6 alkyl, C_2-C_8 alkenyl, aryl, halogen, CN and $COOR^{1d}$, wherein R^{1d} is H, C_1-C_{18} alkyl, C_2-C_8 alkenyl, C_2-C_8 alkynyl or aryl; and

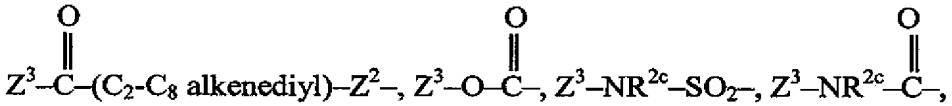
Z is an aliphatic, heterocyclic or heteroaromatic spacer or a combination of two or more thereof, wherein Z can optionally comprise one or more additional SH groups and/or one or more additional non-aromatic C–C double bonds; and

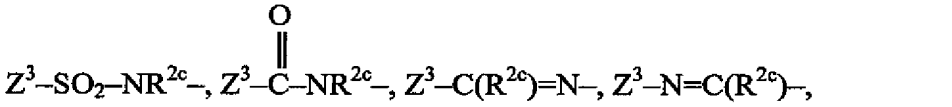
each Z^1 is independently selected from a single bond,

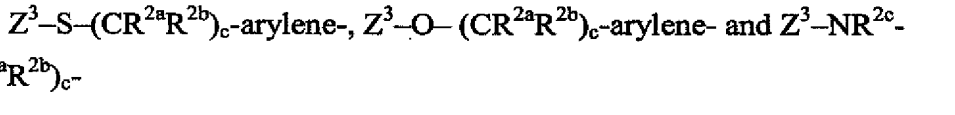
$$Z^3\text{–}\overset{\overset{O}{\|}}{C}\text{–},\ Z^3\text{–}(CR^{2a}R^{2b})_b\text{–},\ Z^3\text{–}O\text{–}(CR^{2a}R^{2b})_b\text{–},\ Z^3\text{–}NR^{2c}\text{–}(CR^{2a}R^{2b})_b\text{–},$$
$$Z^3\text{–}S\text{–}(CR^{2a}R^{2b})_b\text{–},$$











Z^3–arylene-, Z^3–O– $(CR^{2a}R^{2b})_c$-arylene- and Z^3–NR^{2c}-$(CR^{2a}R^{2b})_c$-

arylene-,

wherein R^{2a}, R^{2b} and R^{2c} are independently selected from H, C_1-C_6 alkyl and aryl,

Z^2 is selected from a single bond, O, S and NR^{2c},

Z^3 is a single bond which is connected to Z,

b is an integer from 1 to 10 and

c is an integer from 1 to 3

(c) drying and

(d) optionally applying an oxygen-impermeable overcoat and drying.

25. (previously presented) Process for providing a lithographic printing form comprising:

(a) providing a lithographic printing plate precursor as defined in claim 1,

(b) image-wise exposure of the precursor with radiation of a wavelength suitable for the initiator or initiator system used therein, and

(c) subsequent developing of the exposed precursor obtained in step (b) with an aqueous alkaline developer.

26. (previously presented) A lithographic printing plate precursor comprising

c) an untreated or pretreated substrate and

d) a radiation-sensitive coating comprising

(i)at least one polymeric binder soluble or swellable in aqueous alkaline developers;

(ii) at least one free-radical polymerizable monomer and/or oligomer comprising at least one non-aromatic C–C double bond and at least one SH group in the molecule; and

(iii) a radiation-sensitive initiator or initiator system for free-radical polymerization,

wherein component (ii) has the following formula (I):

$$HS - Z - (Z^1 - CR^{1a} = CR^{1b}R^{1c})_c \qquad (I)$$

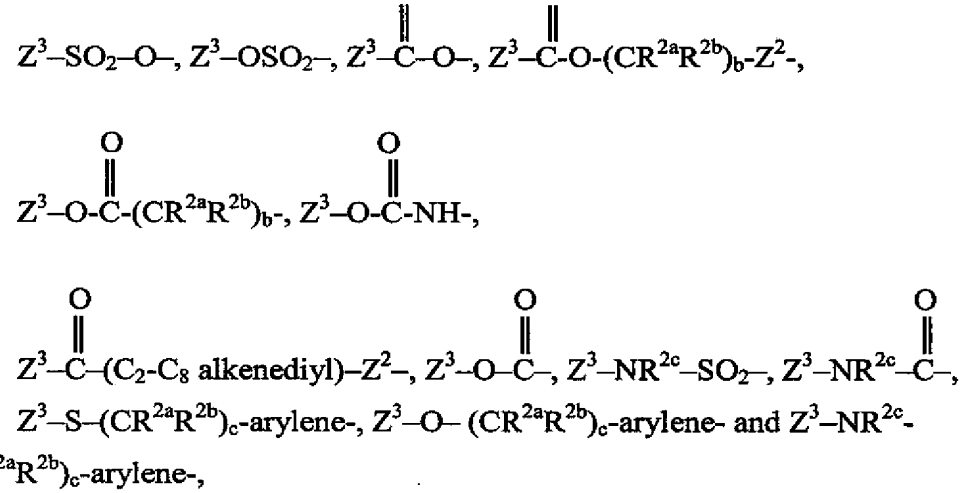
wherein each R^{1a}, R^{1b} and R^{1c} is independently selected from H, C_1-C_6 alkyl, C_2-C_8 alkenyl, aryl, halogen, CN and $COOR^{1d}$, wherein R^{1d} is H, C_1-C_{18} alkyl, C_2-C_8 alkenyl, C_2-C_8 alkynyl or aryl; and

Z is a 1,2,4-triazole group, 1,3,5-triazole group, or a combination of two or more thereof, wherein Z can optionally comprise one or more additional SH groups and/or one or more additional non-aromatic C–C double bonds; and

each Z^1 is independently selected from a single bond,

$$Z^3\text{–}\overset{\overset{O}{\|}}{C}\text{–},\ Z^3\text{–}(CR^{2a}R^{2b})_b\text{–},\ Z^3\text{–}O\text{–}(CR^{2a}R^{2b})_b\text{–},\ Z^3\text{–}NR^{2c}\text{–}(CR^{2a}R^{2b})_b\text{–},$$
$$Z^3\text{–}S\text{–}(CR^{2a}R^{2b})_b\text{–},$$

O O



wherein R^{2a}, R^{2b} and R^{2c} are independently selected from H, C_1-C_6 alkyl and aryl,

Z^2 is selected from a single bond, O, S and NR^{2c},

Z^3 is a single bond which is connected to Z,

b is an integer from 1 to 10 and

c is an integer from 1 to 3.

27. (previously presented) The lithographic printing plate precursor according to claim 26 wherein the component (ii) is at least one compound selected from:

2-thio(4-ethenyl)benzyl-4,6-dimercapto-1,3,5-triazine,

2,4-di-thio(4-ethenyl)benzyl-6-mercapto-1,3,5-triazine, and

3-thio(4-ethenyl)benzyl-5-mercapto-1,2,4-triazole.

28. (previously presented) Process for providing a lithographic printing form comprising:

image-wise exposure of the lithographic printing plate precursor of claim 26 with radiation of a wavelength suitable for the initiator or initiator system used therein, and subsequently developing of the exposed precursor with an aqueous alkaline developer.